

## THE CLAIMS

What is claimed is:

1. A golf ball comprising:  
a core comprising an elastomeric composition, a reactive co-agent present by less than about 10 phr by weight of the elastomeric composition, and a cross-linking agent;  
an intermediate layer encasing the core, the intermediate layer comprising a thermoplastic polymer; and  
a cover encasing the intermediate layer.
2. The golf ball of claim 1, wherein the elastomeric composition comprises a diene polymer.
3. The golf ball of claim 1, wherein the reactive co-agent is present by less than about 5 phr.
4. The golf ball of claim 1, wherein the reactive co-agent is present by about 0 phr.
5. The golf ball of claim 1, wherein the reactive co-agent comprises a metal salt of diacrylate, dimethacrylate, or monomethacrylate, or a non-metallic oligomer.
6. The golf ball of claim 5, wherein the metal is selected from zinc, magnesium, calcium, barium, tin, aluminum, lithium, sodium, potassium, iron, zirconium, and bismuth.
7. The golf ball of claim 1, wherein the golf ball further comprises a thin dense layer between the intermediate layer and the cover, the thin dense layer being positioned at a radial distance outside a centroid radius of the golf ball, and having a thickness from about 0.025 mm to about 1.27 mm.
8. The golf ball of claim 7, wherein the thin dense layer has a specific gravity of greater than about 1.2 g/cm<sup>3</sup>.

9. The golf ball of claim 7, wherein the thin dense layer has a specific gravity of greater than about 1.5 g/cm<sup>3</sup>.
10. A golf ball comprising:  
a core comprising an elastomeric composition, a reactive co-agent present by less than about 10 phr by weight of the elastomeric composition, and a cross-linking agent;  
an intermediate layer encasing the core, the intermediate layer comprising a highly neutralized polymer; and  
a cover encasing the intermediate layer.
11. The golf ball of claim 10, wherein the elastomeric composition comprises a diene polymer.
12. The golf ball of claim 10, wherein the reactive co-agent is present by less than about 5 phr.
13. The golf ball of claim 10, wherein the reactive co-agent is present by about 0 phr.
14. The golf ball of claim 10, wherein the reactive co-agent comprises a metal salt of diacrylate, dimethacrylate, or monomethacrylate, or a non-metallic oligomer.
15. The golf ball of claim 14, wherein the metal is selected from zinc, magnesium, calcium, barium, tin, aluminum, lithium, sodium, potassium, iron, zirconium, and bismuth.
16. The golf ball of claim 10, wherein the golf ball further comprises a thin dense layer between the intermediate layer and the cover, the thin dense layer being positioned at a radial distance outside a centroid radius of the golf ball, and having a thickness from about 0.025 mm to about 1.27 mm.
17. The golf ball of claim 16, wherein the thin dense layer has a specific gravity of greater than about 1.2 g/cm<sup>3</sup>.

18. The golf ball of claim 16, wherein the thin dense layer has a specific gravity of greater than about 1.5 g/cm<sup>3</sup>.